

1. Determinar el dominio de $G(x)$

$$G(x) = \cot x \cot\left(\frac{\pi}{3} - x\right) \cot\left(\frac{\pi}{3} + x\right)$$

$$G(x) = \cot 3x$$

$$\cot x:$$

A) $\mathbb{R} - \{n\pi \pm \frac{\pi}{3}, n \in \mathbb{Z}\}$

B) $\mathbb{R} - \{\frac{k\pi}{3}, k \in \mathbb{Z}\}$

C) $\mathbb{R} - \{\frac{k\pi}{6}, k \in \mathbb{Z}\}$

D) $\mathbb{R} - \{n\pi \pm \frac{\pi}{6}, n \in \mathbb{Z}\}$

E) $\mathbb{R} - \{(2n+1)\frac{\pi}{3}, n \in \mathbb{Z}\}$

$$3x \neq k\pi$$

$$x \neq \frac{k\pi}{3} \checkmark$$

2. Calcular el dominio de:

$$F(x) = \sqrt{\sin x} + \sqrt{-\cos x} \quad (k \in \mathbb{Z})$$

$$\sin x \geq 0 \wedge \cos x \leq 0$$

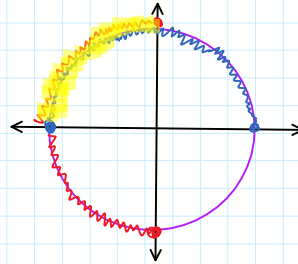
A) $[(4k+1)\frac{\pi}{2}; (2k+1)\pi]$

B) $]k\pi; (2k+1)\pi[$

C) $]2k\pi + \frac{\pi}{3}; (4k+1)\frac{\pi}{2}]$

D) $\mathbb{R} - \{\frac{k\pi}{3}\}$

D) $[(4k+1)\frac{\pi}{2}; 2k\pi + \frac{2\pi}{3}[$



$$[(4k+1)\frac{\pi}{2}; (2k+1)\pi]$$

3. Determinar el dominio de $H(x)$ si:

$$H(x) = \frac{\sin x}{\cos 3x - \cos x}$$

$$-2 \sin x \sin 2x \neq 0$$

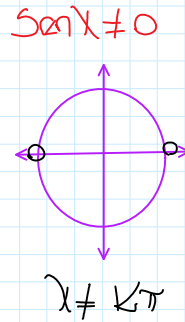
A) $\mathbb{R} - \{\frac{n\pi}{2}, n \in \mathbb{Z}\}$

B) $\mathbb{R} - \{\frac{n\pi}{6}, n \in \mathbb{Z}\}$

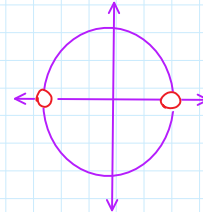
C) $\mathbb{R} - \{\frac{n\pi}{3}, n \in \mathbb{Z}\}$

D) $\mathbb{R} - \{\frac{n\pi}{4}, n \in \mathbb{Z}\}$

E) $\mathbb{R} - \{(2n+1)\frac{\pi}{2}, n \in \mathbb{Z}\}$

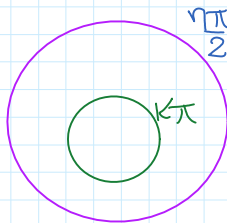


$$x \neq k\pi$$



$$2x \neq n\pi$$

$$x \neq \frac{n\pi}{2} \checkmark$$



4. Hallar el dominio de:

$$G(x) = 4\csc\left(x - \frac{\pi}{6}\right) + \sqrt{5} \quad (k \in \mathbb{Z})$$

$$x - \frac{\pi}{6} \neq k\pi$$

$$x \neq k\pi + \frac{\pi}{6}$$

A) $\mathbb{R} - (4k+1)\frac{\pi}{8}$

B) $\mathbb{R} - \{k\pi + \frac{\pi}{6}\}$

C) $\mathbb{R} - \{\frac{k\pi}{6}\}$

D) $\mathbb{R} - \{\frac{k\pi}{2}\}$

E) $\mathbb{R} - (2k+1)\frac{\pi}{3}$

5. Hallar el dominio de:

$$F(x) = \sqrt{\sin^2 x - 1} + 2\csc x + \cos x; \quad (n \in \mathbb{Z})$$

$$\csc x: \exists$$

$$x \neq k\pi$$

A) $n\pi$

B) $2n\pi$

C) $(2n+1)\pi$

D) $[(2n+1)\pi; 2n\pi]$

E) $(2n+1)\frac{\pi}{2}$

$$\sin^2 x - 1 \geq 0$$

$$\sin^2 x \geq 1$$

$$\sin^2 x = 1$$

$$\sin x = \pm 1$$

$$x = (2n+1)\frac{\pi}{2}$$

$$y = \sqrt{1-1} + 2(\pm 1) + 0$$

$$y = \pm 2$$

$$y = \pm 2$$

2

$$R_f: \{-2; 2\}$$

6. Hallar el rango de :

$$F(x) = \frac{\text{Sen}x}{\text{Tan}x} + \frac{\text{Cos}x}{\text{Cot}x}$$

$$\text{Def: } \mathbb{R} - \frac{k\pi}{2}$$

$$y = \frac{\text{Sen}x}{\frac{\text{Sen}x}{\text{Cos}x}} + \frac{\text{Cos}x}{\frac{\text{Cos}x}{\text{Sen}x}}$$

$$y = \text{Sen}x + \text{Cos}x$$

$$-\sqrt{2} \leq \text{Sen}x + \text{Cos}x \leq \sqrt{2}$$

A) $]-\sqrt{2}; 1[- \{-1\}$

B) $] -1; \sqrt{2}[$

C) $[-\sqrt{2}; \sqrt{2}] - \{-1; 1\}$

D) $] -\sqrt{2}; \sqrt{2}[$

E) $] -1; \sqrt{2}] - \{1\}$

$$x=0 \leadsto y \neq 1$$

$$x=\frac{\pi}{2} \leadsto y \neq 1$$

$$y=\pi \leadsto y \neq -1$$

7. Hallar el rango de :

$$G(x) = \text{Sen}^6x + \text{Cos}^6x$$

$$\text{Def: } \mathbb{R}$$

A) $\left[\frac{1}{2}; 1\right]$

B) $\left[\frac{3}{4}; 1\right]$

C) $\left[\frac{1}{4}; 1\right]$

$$y = \frac{5}{8} + \frac{3}{8} \cos 4x$$

$$-1 \leq \cos 4x \leq 1$$

$$-\frac{3}{8} \leq \frac{5}{8} + \frac{3}{8} \cos 4x \leq \frac{3}{8}$$

$$\frac{1}{4} \leq \frac{5}{8} + \frac{3}{8} \cos 4x \leq 1$$

D) $\left[\frac{1}{4}; \frac{3}{4}\right]$

E) $\left[\frac{1}{4}; 1\right]$

8. Hallar el rango de la función :

$$F(x) = 1 + 4\text{Sen}^2|2x|$$

si su dominio es :

$$\left[-\frac{3\pi}{8}; -\frac{\pi}{12}\right]$$

A) $[2; 3[$

B) $[2; 4[$

C) $[2; 5]$

D) $[3; 5]$

E) $[2; 6[$

$$-\frac{3\pi}{8} < x \leq -\frac{\pi}{12}$$

$$-\frac{3\pi}{4} < 2x \leq -\frac{\pi}{6}$$

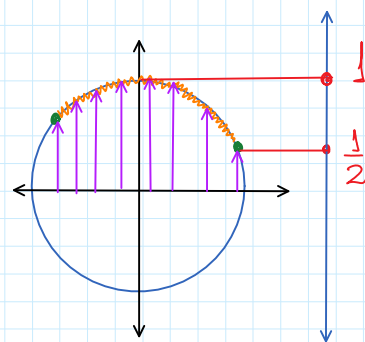
$$\frac{\pi}{6} \leq |2x| < \frac{3\pi}{4}$$

$$\frac{1}{2} \leq \text{Sen}|2x| \leq 1$$

$$\frac{1}{4} \leq \text{Sen}^2|2x| \leq 1$$

$$1 \leq 4\text{Sen}^2|2x| \leq 4$$

$$2 \leq f(x) \leq 5$$



9. Sea la función "F" definida por :

$$F(x) = \frac{2\text{Sen}x}{\text{Cos}3x + \text{Cos}x} + \text{Tan}x$$

si $x \in \left[\frac{\pi}{6}; \frac{\pi}{2}\right]$ Hallar el rango

$$y = \frac{2\text{Sen}x}{\text{Cos}2x \text{Cos}x} + \text{Tan}x$$

$$y = \text{Tan}x \text{Sec}2x + \text{Tan}x$$

si $x \in \left[\frac{\pi}{6}; \frac{\pi}{2}\right]$ Hallar el rango

- A) $\mathbb{R} - \{-1; 1\}$ B) $\mathbb{R} -]0; \sqrt{3}[$
 C) $\mathbb{R} - \mathbb{Z}$ D) $\mathbb{R} - \{-1; 0, 1\}$
~~E) $\mathbb{R} - [0; \sqrt{3}]$~~

$$\frac{\pi}{6} < x < \frac{\pi}{2}$$

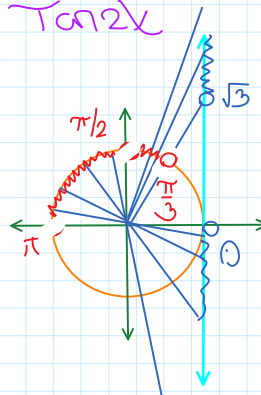
$$\frac{\pi}{3} < 2x < \pi$$

$$y = \tan x \sec 2x + \tan x$$

$$y = \tan x (\sec 2x + 1)$$

$$y = \tan x \cdot \frac{\tan 2x}{\tan x}$$

$$y = \tan 2x$$



$$-\infty < y < 0 \cup \sqrt{3} < y < \infty$$

$$R_f: \langle -\infty; 0 \rangle \cup \langle \sqrt{3}; \infty \rangle$$

$$R_f: \mathbb{R} - [0, \sqrt{3}]$$

10. Hallar el rango de la función :

$$F(x) = 1 - 2\cos\left(\frac{\pi}{4} \operatorname{Sen} x\right)$$

- A) $[-1; 3]$ B) $[-1; \sqrt{2} - 1]$ C) $[-1; 1]$
 D) $[\sqrt{2} - 1; 1]$ ~~E) $[-1; 1 - \sqrt{2}]$~~

$$\frac{\sqrt{2}}{2} \leq \cos(\arccos) \leq 1$$

$$-\sqrt{2} \geq \dots \geq -2$$

$$1 - \sqrt{2} \geq \dots \geq -1$$

$$-1 \leq \operatorname{Sen} x \leq 1$$

$$-\frac{\pi}{4} \leq \frac{\pi}{4} \operatorname{Sen} x \leq \frac{\pi}{4}$$

arco

